Silage harvest, Weld County, Colorado.

Table 28. Silage moisture at different maturity levels.

Maturity stage	Approximate moisture (%)
Early dent	73
1/2 milk-line	66
3/4 milk-line	63
no milk-line	60

*Source: Weirsma and Carter, University of Wisconsin, 1993

Milk-line is the moisture level in the kernel as it dries and hardens from top to bottom. It can be identified by pressing on the side of the kernel with your thumbnail.

Harvest Sequence

Silage

Corn silage harvest should begin before physiological maturity, at mid to late dent for silage quality and proper dry matter. Ideal moisture for ensiling in pits and covered piles is from 65 to 70%. This moisture content varies with hybrid and growing conditions, but occurs somewhere around one-half to two-thirds milk-line. As harvest is delayed from full dent to black layer, crude protein levels decline, fiber levels increase or remain constant, and digestibility tends to decrease. Dry, over-mature plants will produce silage with drier grain and harder seed coats, more starch, and fewer sugars.

BMP

Fields that are prone to wind erosion will benefit from a higher stubble height to slow wind speed and help prevent erosion. Taller stubble height may also help collect more snow and improve soil moisture for the following spring.

Cutting height also influences silage quality. A study by Pioneer agronomic research (Curran and Posch, 2000) showed that silage digestibility improved 2.2% when cut at 20 versus 4 inches. Percent starch, adjusted NE_L (net energy) and TDN (total digestible nutrients) also improved when cutting height was increased. However, silage yield at 30% dry matter was lowered 0.19 tons for every inch of cutting height above 4 inches. Growers should base cutting height upon market demands. Lower cutting height may be favorable if silage is sold on a contract delivery basis without a quality payment scale. If corn tests high for nitrate, ensiling corn can reduce nitrate level by 30 to 60%.

Grain

An advantage of growing corn in Colorado is the excellent fall drying weather. These drying conditions allow field dry-down to storable moisture levels (13 to 15.5%) in most areas of Colorado without the added expense of mechanical drying. Reports of dry matter losses from field drying have been largely disproved.

Base harvest schedules upon grain moisture, stalk quality, and ear retention after black layer. Assess stand condition for stalk rot, corn borer, and western corn rootworm damage. Fields with damage severe enough to increase lodging potential from wind should be harvested earlier. Otherwise, hybrid maturity and planting date should dictate which fields will dry down first. Another consideration is soil moisture (drier is better), as most soil compaction will occur with heavy equipment (trucks, grain carts) during the harvesting season.

Yield Estimation Work Sheet

A number of yield prediction methods exist, but the Yield Component Method (YCM) is probably most used. YCM can be used when kernel development has reached the late milk to early dough stages (R3 to R4). Estimates made earlier in the kernel development period risk being overly optimistic if subsequent severe stresses cause kernel abortion prior to R3 (milk) stage.

Crop uniformity greatly influences the accuracy of any yield estimation technique. The less uniform the field, the greater the number of samples that should be taken to estimate yield for the field. There is a fine line between fairly sampling disparate areas of the field and sampling randomly within a field so as not to unfairly bias the yield estimates up or down.

Yield Component Method Work sheet	Example:
1. Measure length of a sampled corn row equal to 1/1000 of an acre: 43560/row spacing in feet Result/1000	 43560/2.5 feet (30 inches) 17,424 feet /1000 = 17.5 feet
2. Number of harvestable ears in 1/1000th of the sample row:	33 ears in 17.5 feet of sample row
3. Number of complete kernel rows per ear on every fifth ear in sample row: Average rows per ear	 16 kernel rows per ear
4. Number of kernels per row on each ear: Average kernels per row	 34 kernels per row
5. Harvestable ears/row x rows/ear x kernel/row: Result divided by 90:	 33 x 16 x 34 = 17,952 17,592/90 = 200 bu/A

Post-harvest Considerations

Assessing yields shortly after harvest is good idea while the season is fresh in growers' minds. Observations from the combine operator as well as yield monitor maps can be extremely useful in locating problem areas. Once the crop is harvested, there are a number of decisions that will impact next year's crop:

- post-harvest tillage, what should be done in the spring vs. fall,
- grazing of stover and unharvested grain,
- soil sampling for next year's crop,
- planting a cover crop (wheat or rye) following silage to prevent wind erosion, and
- post-season irrigation for leaching salts if salinity is a problem.

Stored-grain considerations

- Store grain at a moisture content of 14% or less.
- Level the top surface of the grain.
- Aerate in the fall to cool the grain to 40˚F.
- Check and record grain temperature every 21 days. Aerate as soon as any increase in temperature is evident.
- Aerate in spring until grain is at 60˚F.
- Try to maintain less than 10˚F difference between average outdoor temperature and grain temperature.
- Check for insects in the fall, spring and summer. If treatment is necessary, use proper procedures.